SERVICE MANUAL *TT 420*

marantz®

Model *TT 420*

Turntable

FEATURES

Full-automatic, direct drive with cueing, strobe, pitch control, record size selector, speed selector, repeat, start/stop and dual suspension cabinet.
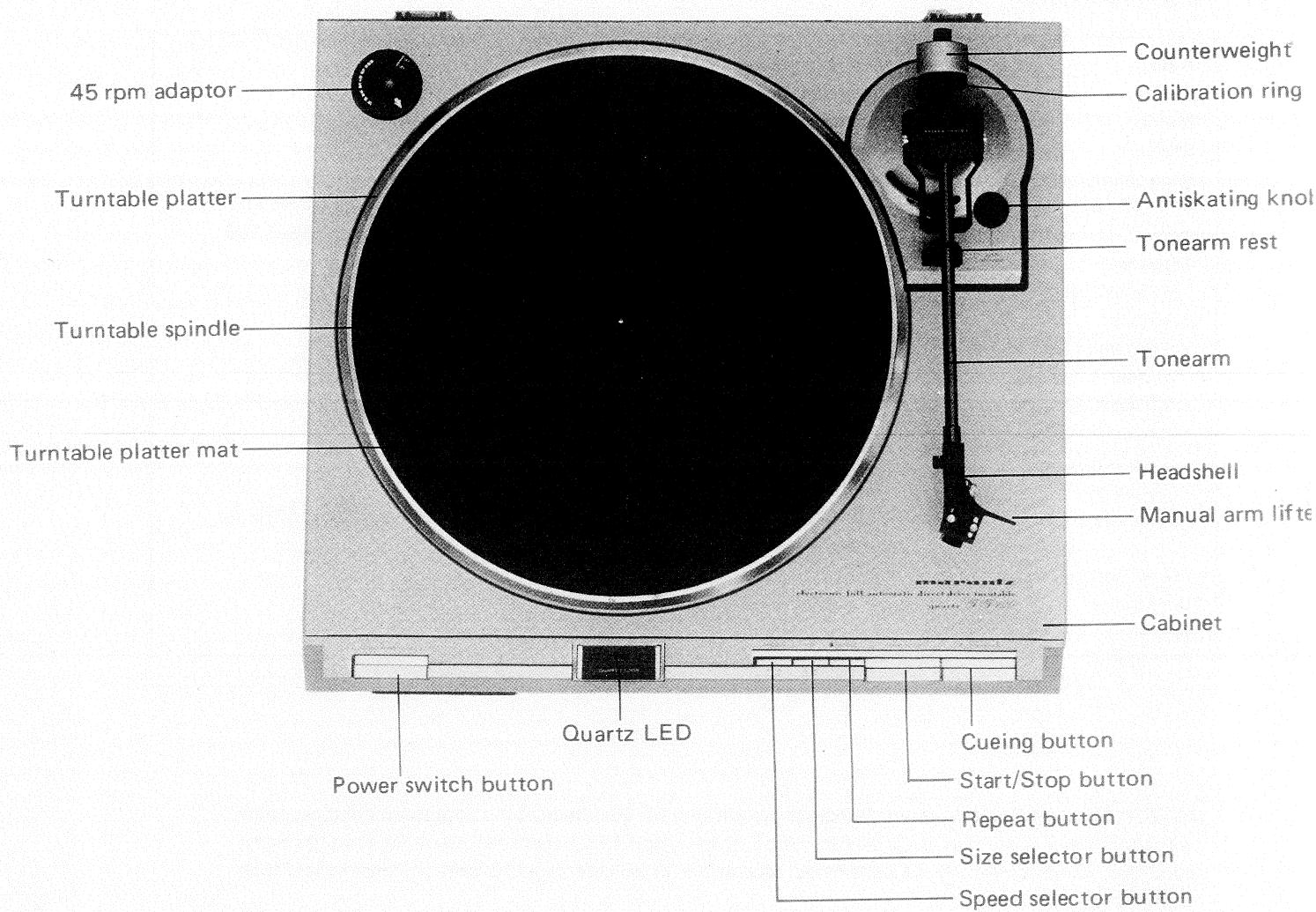
SPECIFICATIONS:

Type	2 speeds, direct drive, full-automatic turntable
Platter	Aluminum alloy die-cast, 310mm diameter
Motor	4 phase, 8 pole magnetic field withi PLL coreless DC
Speed	2 speeds; 33-1/3 and 45 rpm
Pitch control range	±3% or more
S/N (DIN B)	60dB or more, Test record: DN45544, Test equipment: by DIN45539
Wow & Flutter (DIN CCIR)	0.13% or less, Test record: DIN45545, Test equipment: by DIN45500
Tonearm	
Effective length	214±2mm
Cartridge	
Frequency response	20 - 20,000Hz
Output voltage	1.8 - 3.2mV at 1kHz, 3.54cm/sec, Test record: TRS-1004
Channel differnce	2 dB or less at 1kHz, Test record: TRS-1004
Channel separation	18dB or more at 1kHz, Test record: TRS-1004
Tracking force	2 gram+0.5, −0.3 gram
Stylus tip	0.6mil diamond stylus
Power source	110/120/220/240V 50/60Hz, 220V 50Hz for Europe, 240V 50Hz for UK and Australia
Power consumption	9W±10%
Dimensions	416(W) x 373(D) x 115(H) mm
Weight	5.9kg
Accessories	45 rpm adaptor

NOTE: Nominal Specs represent the design specs; all units should be able to approximate these-some will exceed and some may drop slightly below these specs. Limit specs represent the absolute worst condition which still might be considered acceptable; in no case should a unit perform to less than within any Limit Spec.

Lubrication of the mechanism is not required. However, whenever a unit is brought in for adjustment or repair, always use good common sense ... clean any dust or dirt from mechanical parts and if moving parts do seem to bind, check for dirt. If necessary, add a very fine film of light-weight specially formulated lubricant.
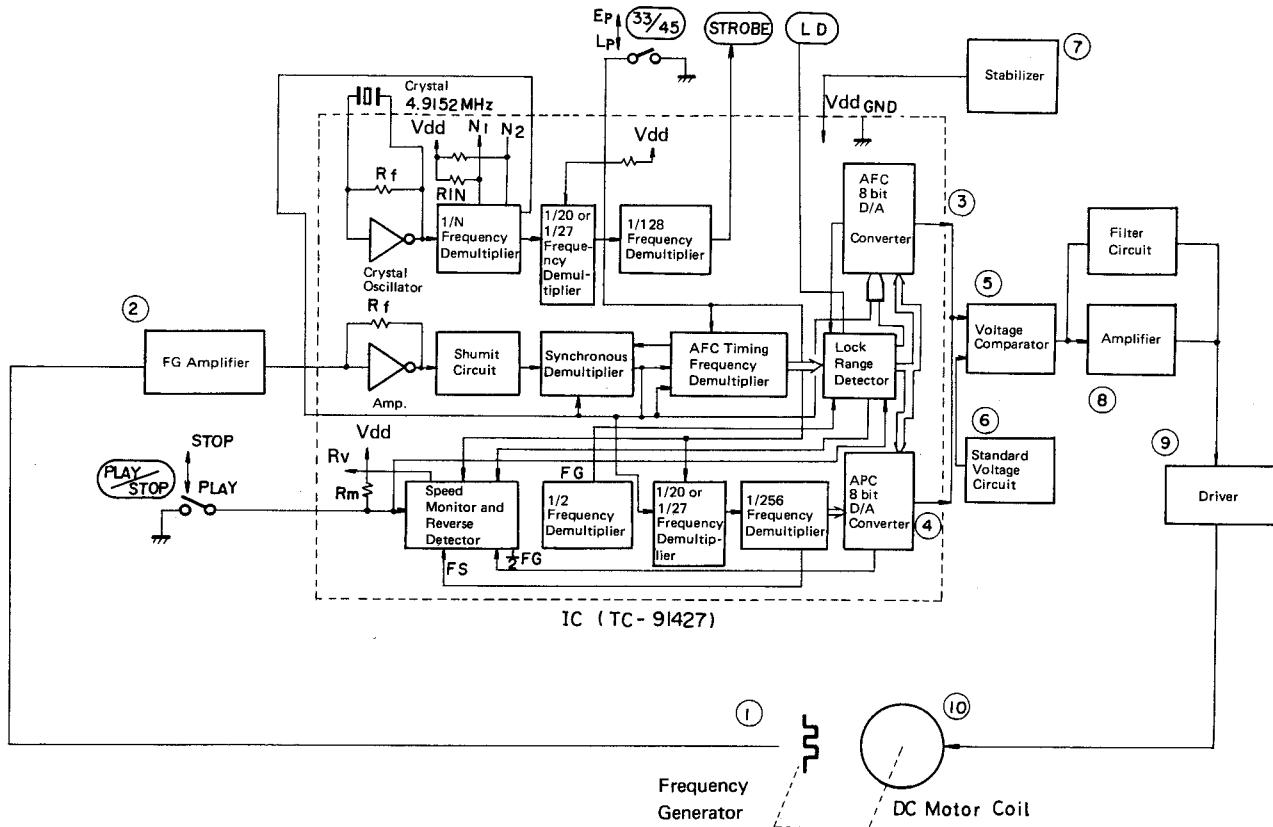
DESIGNATION OF PARTS

45 rpm adaptor ——————

Counterweight

Calibration ring

Turntable platter ——————

Antiskating knob

Tonearm rest

Turntable spindle ——————

Tonearm

Turntable platter mat ——————

Headshell

Manual arm lifte

Cabinet

Quartz LED

Cueing button

Start/Stop button

Power switch button

Repeat button

Size selector button

Speed selector button

PRINCIPLE OF OPERATION FOR MOTOR

1. BLOCK DIAGRAM

Frequency Generator / DC Motor Coil

IC (TC-91427)

1) **FG (Frequency Generator)**
FG generator is consist of a rotor which is dualy magnetized 8-pole and 160-pole, and all round integrated type FG pattern.
And it generates sine wave of 44.44 Hz at 33-1/3 rpm and 60.00 Hz at 45 rpm. amplified up to level of threshold voltage of schumit trigger.

2) **FG Amplifier**
To amplify output signal from FG.

3) **AFC output (Automatic frequency control output)**
To be consist of 8 bit of D/A converter which is frequency-voltage converter against FG frequency.

4) **APC output (Automatic phase control output)**
To be consist of 8 bit D/A converter which is phase comparator (ϕ-V) to compare fai of phase difference between 1/2 FG and FS' standard frequency.

5) **Comparator**
To compare standard voltage and total of AFC output and APC output.

6) **Standard voltage circuit**
To divid resister of standard voltage of stabilizer.

7) **Stabilizer**
To supply constant voltage to IC.

8) **Amplifier**
To drive hole element of detecting the location of rotor.

9) **Driver**
To detect location of polarity magnetized on rotor by means of hole element and select the order of current to feed to 4-pole driving coil.
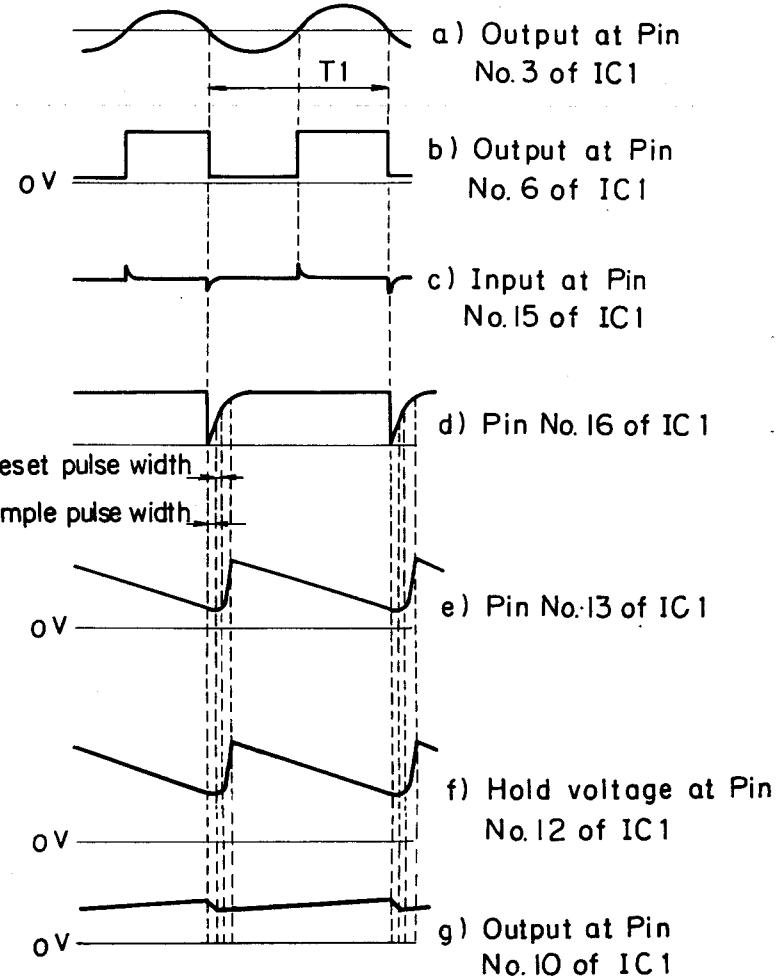The current of hole element is controlled by servo circuit, and the output voltage of hole element is changed by rotary speed and phase change.
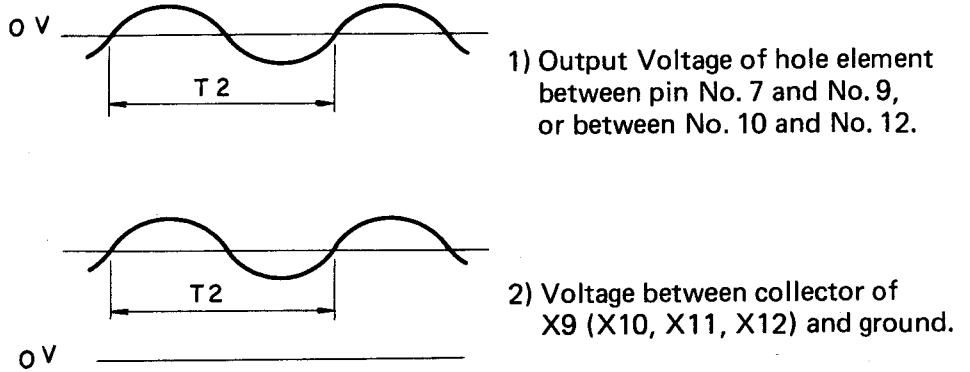
10) **Motor**
Coreless, slotless and flat type motor with 4-phase, half wave driving system.

2. TIMING CHART

1) Control Section

a) Output at Pin No. 3 of IC1

b) Output at Pin No. 6 of IC1

c) Input at Pin No. 15 of IC1

d) Pin No. 16 of IC1

Reset pulse width

Sample pulse width

e) Pin No. 13 of IC1

f) Hold voltage at Pin No. 12 of IC1

g) Output at Pin No. 10 of IC1

2) Driving Section

1) Output Voltage of hole element between pin No. 7 and No. 9, or between No. 10 and No. 12.

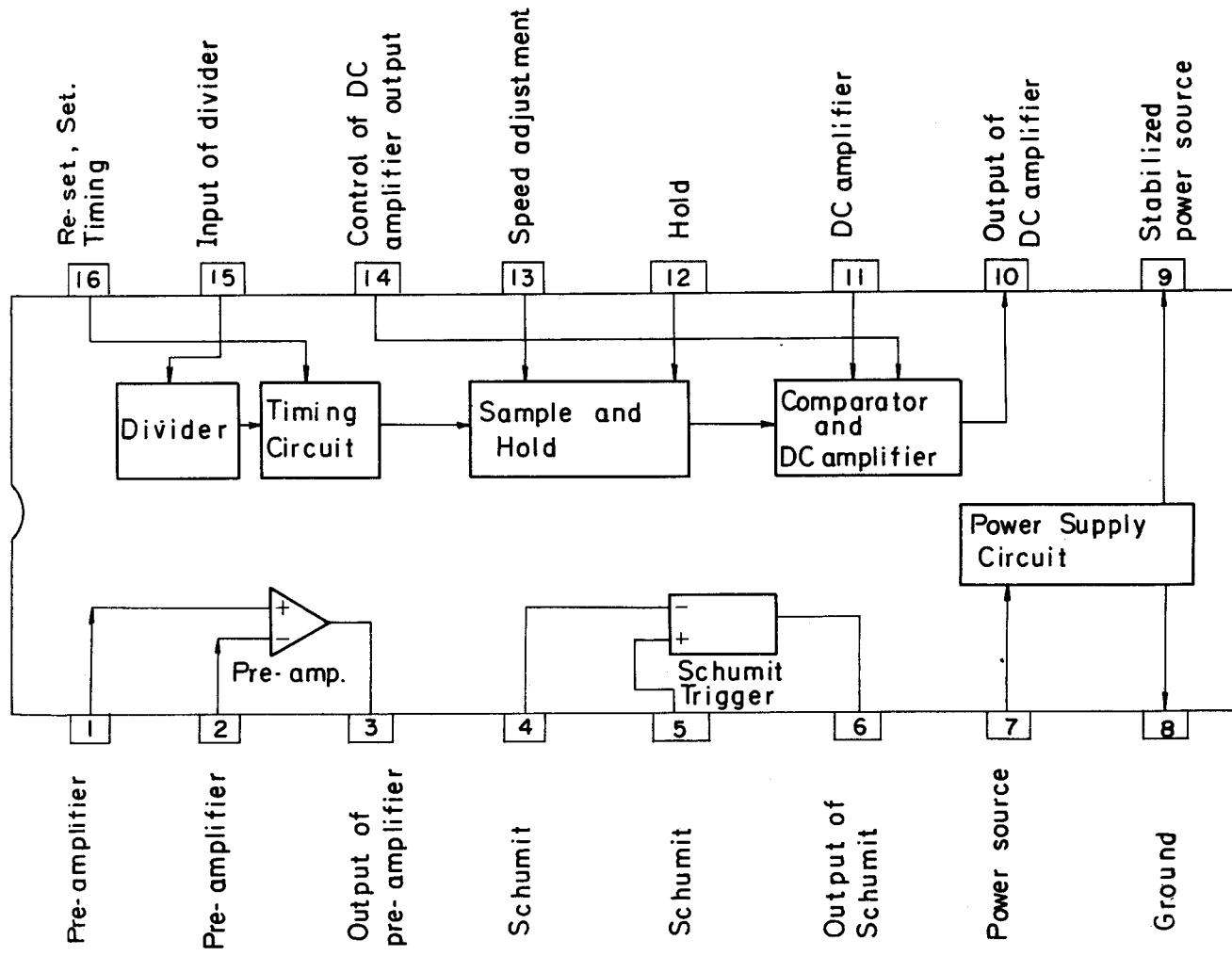2) Voltage between collector of X9 (X10, X11, X12) and ground.

3. ALIGNMENT METHOD

3-1. Speed alignment

1) Set changeover switch to 45 rpm.

2) Set potentiometer(pitch control) to its center.

3) Set speed to 45 rpm by means of adjusting VR1(100 K ohm).

4) Set speed changeover switch to 33-1/3 rpm.

5) Set speed to 33-1/3 rpm by means of adjusting VR2(100 K ohm).

4. BLOCK DIAGRAM OF IC1 (μ PC1043)

Micro Processor (IC101)

1. Pin Location:

Clock Signal	→	1	⌒	28	←	Clock Signal
Input PLAY/CUT switch	→	2		27	—	Power Source (–)
Input CUE switch	→	3		26	←	Input Signal, Reset
Input REPEAT switch	→	4		25		Set at L (–5V)
Input SPEED switch	→	5 Micro		24	←	Input Signal, UP
Input SIZE switch	→	6 Processor	23	←	Input Signal, Tonearm Location, RETURN
		7 MP1001		22	←	Input Signal, Tonearm Location, 30 cm (12″)
Set at H (+5V)		8		21	←	Input Signal, Tonearm Location, 17 cm (7″), REST
		9		20		Open
Output, Solenoid (1)	←	10		19		Open
Output, Solenoid (2)	←	11		18		Open
Output Arm Travel Outward	←	12		17	→	Output Signal, REPEAT
Output Arm Travel Inward	←	13		16	→	Output, Main Motor
Power Source (+)	→	14		15		Set H (+5V)

All of the terminals are open drain.

2. Function of Pins:

1) Clock:

Clock input signal of microprocessor and oscillation frequency is about 400 kHz.

2) Input, PLAY/CUT switching:

Input level H (+5V) is accepted as PLAY signal at the rest position, also is accepted as CUT signal at position other than rest.

3) Input, CUE switching:

Input H (+5V) sign is accepted as UP, DOWN signal by pressing CUE button.
But signal is interrupted when tonearm is at the rest position or in motion.

4) Input, REPEAT switching:

Input H (+5V) is accepted as REPEAT ON, or REPEAT OFF signal by pressing repeat button.

5) Input, SPEED switching:

Input H (+5V) is accepted as speed change signal by pressing speed change button.

6) Input, SIZE switching:

Input H (+5V) is read as 30 cm (12″) and H (–5V) is read as 17 cm (7″), but the signal is accepted only when the tonearm is traveling from the tonearm rest to lead-in point to start play.

7, 8, 9) No. 7, 8 and 9 are optional pins, not used and set at H (+5V).

10) Output (1), Solenoid:

To feed H (+5V) signal for tonearm down motion, and is opened for tonearm up motion.

11) Output (2), Solenoid:

To feed H (+5V) signal for only initial 1 sec., for the tonearm down motion, and it is opened in other mode.

12) Output, Arm Travel Outward:

To feed H (+5V) signal for outward travel of tonearm in automatic mode, and also to feed H (+5V) as BRAKE signal to interrupt inward travel of the tonearm and at tonearm down motion.

13) Output, Arm Travel Inward:

To feed H (+5V) signal for inward travel of tonearm in automatic mode, and also to feed H (+5V) as BRAKE signal to interrupt outward travel of the tonearm and at tonearm down motion.

14) Power Source (+):

±5V is used as 10V power source.

15) No. 15 is optional pin, not used and the level is set at H (+5V).

16) Output, Main Motor ON/OFF:

To feed H (+5V) signal when PLAY input is applied and the tonearm is located other than at the rest position.

17) Output Signal, REPEAT:

To feed H (+5V) signal for REPEAT ON, and it is opened for REPEAT OFF.

18) No. 18 is optional pin, not used and opened.

19) No. 19 is optional pin, not used and opened.

20) No. 20 is optional pin, not used and opened.

21, 22, 23) Input Signal, Tonearm Location:

Same function as 2-1).

24) Input Signal, UP:

To read completion of tonearm lift motion by H (+5V) input signal.

25) No. 25 is optional pin, not used and set at L (-5V).

26) Input Signal, Reset:

To recover output signal to initial level by H (+5V) input signal.

To reset all modes to initial mode by input signal of H (+5V).

Initial mode means that the tonearm is located at the rest position and speed is 33 rpm.

27) Power Source (-):

±5V is used as 10V power source.

28) Clock Signal:

Clock input signal of microprocessor and oscillation frequency is about 400 KHz.

3. Rating:

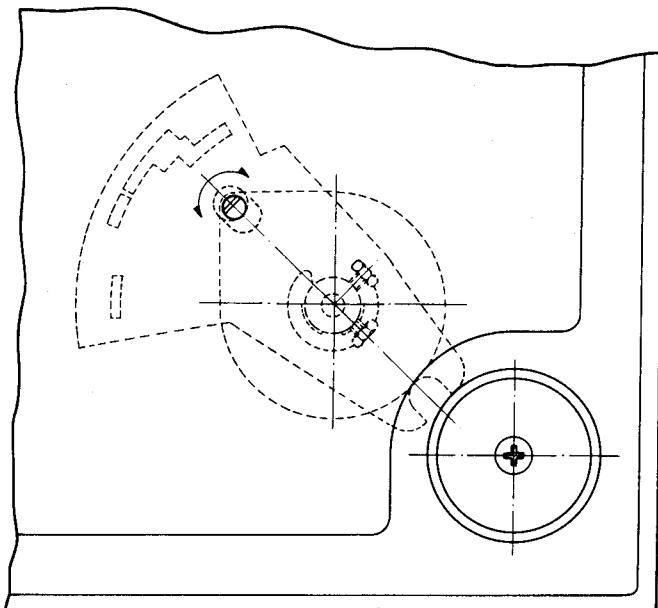|	
Power Source:	10V ± 10%
Input Terminal:	H -- 8V or more
	L -- 5.7V or less
Output Terminal:	Open drain, but provides additional PULL-DOWN resistors to the terminals.

Fig. 1

ADJUSTMENT OF LEAD IN ADJUSTMENT

Adjust disc lead-in dimention by turning the lead-in accentric pin on the feed arm assembly.

Turn accentric pin clockwise to adjust tonearm away from the disc and turn counter clockwise to move the tonearm toward the disc (fig. 1).

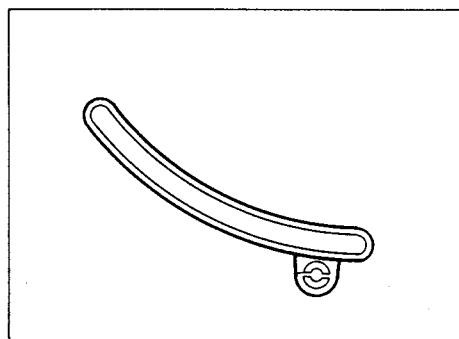The position of automatic return is fixed automatically by lead-in adjustment.

Fig. 2

ADJUSTMENT OF STYLUS HEIGHT

Place a record on the platter and set the cueing button to▼. More the tonearm over the record. The stylus should clear the record by 5mm. This clearance can be adjusted, if necessary, with the screw on the cueing platform (fig.2) To increase the clearance, turn the screw counter-clockwise.

Your TT420 is equipped with an auto-return mechanism which returns the tonearm to the tonearm rest whenever the record is finished playing or if the STOP button is operated. Unless the clearance between stylus and record is properly adjusted, the tonearm will not return to the correct position of the arm rest and possibly fall onto the record surface thereby damaging it. Check for this possible problem after your unit is connected and operational. Return the tonearm to its rest and clamp it with locklever on the rest. Set the cueing button to▼.

ADJUSTMENT FOR SUB-CHASSIS LEVEL

The black screw on the bottom lid is pre-adjusted and fixed to keep sub-chassis level.

TROUBLE SHOOTING

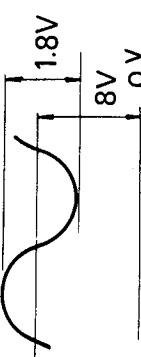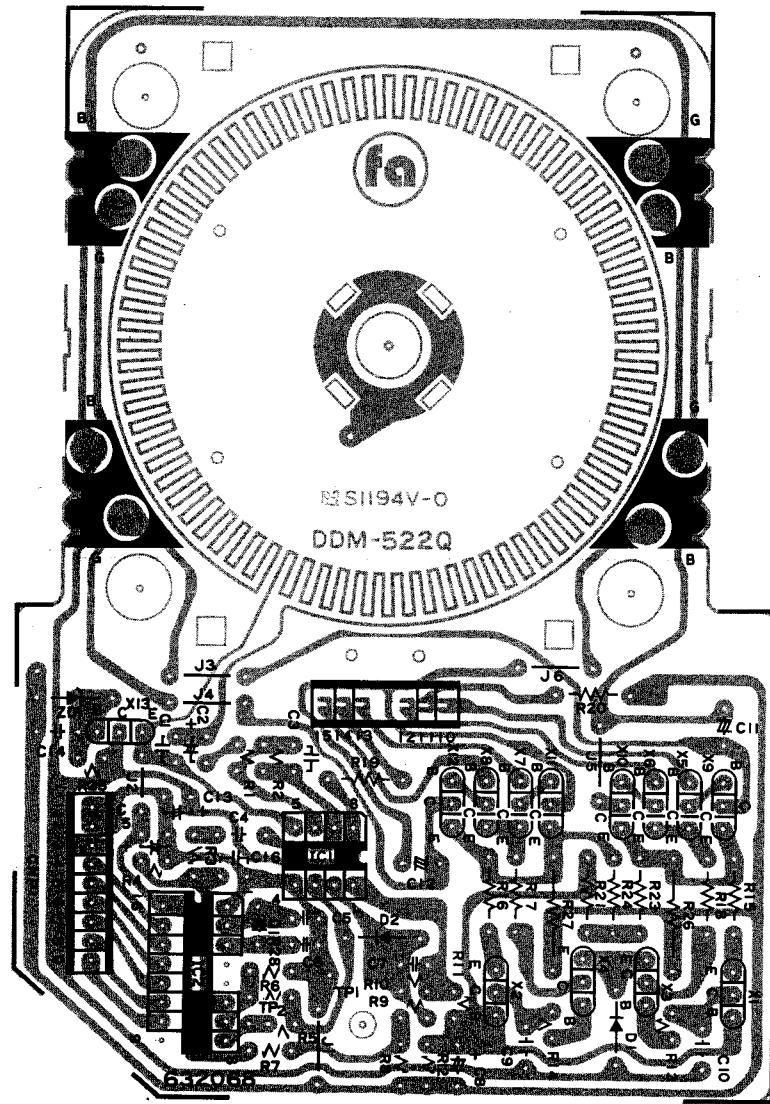| Sympton	Cause	Repair
When power is on, the tonearm does not return to the arm rest.	No generation of differential input(high) on 26 pin of IC101.	Deffective R132, C110, D105. or mal-soldering.
	Micro computer does not oscillate. (to be observed at 1 pin or 28 pin)	Deffective L101, C109 or mal-soldering
When the tonear is on the arm rest, the turntable does not stop its rotation.	Collector of X107 is not Low.	Deffective X107.
	Base of X107 is more than 0.6V.	Deffective IC102
	When Base of X107 is less than 0.3V, 6 pin of IC102 is Low.	To check wave form of 21, 22, 23 pins of IC101.
	When Base of X107 is less than 0.3V, 6 pin of IC102 is High.	
Tonearm does not move.	Voltage variation between No.1 and No.2 of CNP103.	Mal-contact of connector of CNP103.
	No voltage variation between No.1 and No.2 of CNP103. 1) No variation at 5 pin of IC103.	To check short-cut of coil of PU motor. Mal-contact of connector of CNP103.
	2) No variation at 4 pin of IC102, but variate at 3 pin of IC102.	To check 5 pin of IC102.
Tonearm does not descend vertically.	Voltage of more than ± 100 mV generates at 1 pin of output terminal of IC103.	To recheck VR101
Tonearm does not cue down.	11 pin of IC101 is Heigh for 1 second.	Deffective X106.
	11 pin of IC101 is Low for 1 second.	To adjust stroke of solenoid as 2.2 mm with normal X106. to probe High in input terminals of IC101.
No key input	To probe High in input terminals of IC101.	
	1) When High is probed.	To check the parts concerned with terminals of High of IC101.
	2) When High is not probed, it does not accept key input after Cue down.	To adjust to Low when Cueing switch is down.
Tonearm always breaks	5 pin of IC102 is High.	To check outside fixing circuit of 5 pin.
	5 pin of IC102 is Low, but 3 pin of IC102 variates by moving the tonearm by hand.	Deffective IC102.
Deviation of Auto-in and Auto-return.	Deviation of sector	To adjust it by eccentric pin Refer to LERD IN ADJUSTMENT
Strobe does not light when power is on.	No input of power supply	Deffective fuse 102.
Strobe is not bright enough and the tonearm does not move smoothly.	Input voltage of transformer is low.	To confirm change of input voltage and change transformer.

Symptom	Cause	Procedure
a) Direct Drive Motor does not rotate or speed is remarkably slow.	a) 1. Transformer or Rectifing circuit is defective. 2. Hall Element is defective. 3. Transistor X9, X10, X11, X12 or X5, X6, X7, X8 is defective.	a) 1. Check voltage between 3 and 2 of CNP 1 of Motor Control Circuit PCB. If 22V is not observed, replace Transformer or Rectifing circuit. 2. Check waveform of base signal of between X5 and X6, X7 and X8. Waveform should be 0.4V / 0V If not, hall element is defective, replace Motor Control Circuit PCB. 3. Check waveform of collector signal of X9, X10, X11, X12. Waveform should be 20V / 0 If the waveform is not observed, check transistors X5, X6, X7, X8, X9, X10, X11, and X12, and replace defective one The above waveform is to be observed when DC 1V is applied letween 10 of IC1 and ground
b) Direct Drive Motor dies not rotate.	b) 1. Direct Drive Motor is defective 2. IC 1 of Motor Control Circuit PCB is defective.	b) 1. Check resistance of Motor Winding Wire. (between G and G, B and B) Infinite resistance: Break wire 0 resistance: Short wire 105 ohm(approx): Normal 2. Check voltage between terminals GND and 10 of IC 1. If 3.66V is not observed, replace IC 1.
c) Motor runs(Motor speed is remarkably high)	c) 1. IC 1 or IC 2 is defective.	c) 1. Check voltage between terminals GND and 1 of IC 1. If voltage fluctuate IC1 or IC2 is normal. No fluctuationi defective IC1 or IC2.
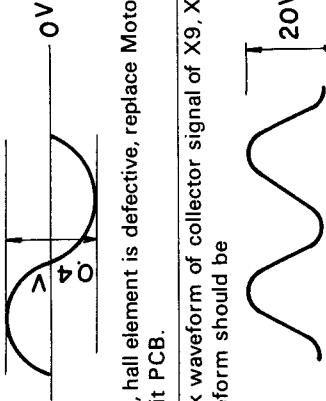
Symptom	Cause	Procedure
	2. FG pattern is defective, or IC.1 is defective.	4. Check voltage between terminals GND and 7 of IC 1. Waveform should be 1.8V 8V 0 V If this waveform is not observed, FG pattern or IC 1 is defective, replace IC 1 or Direct Drive Motor Control circuit PCB.

632214-1
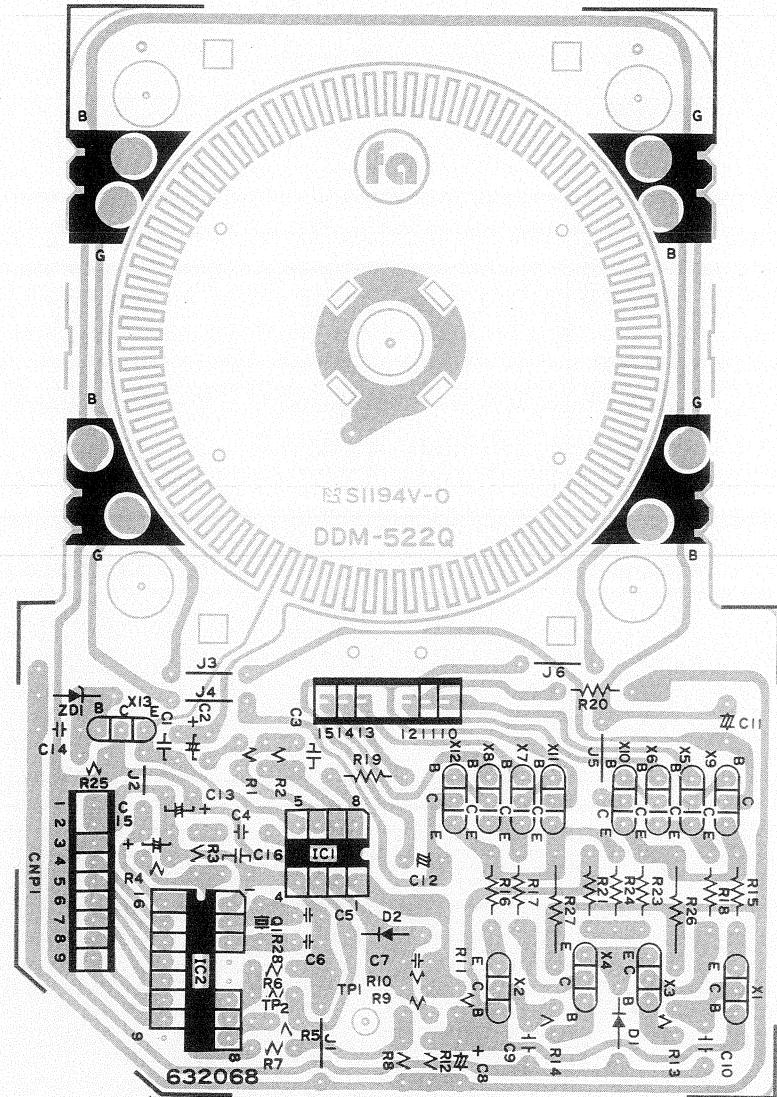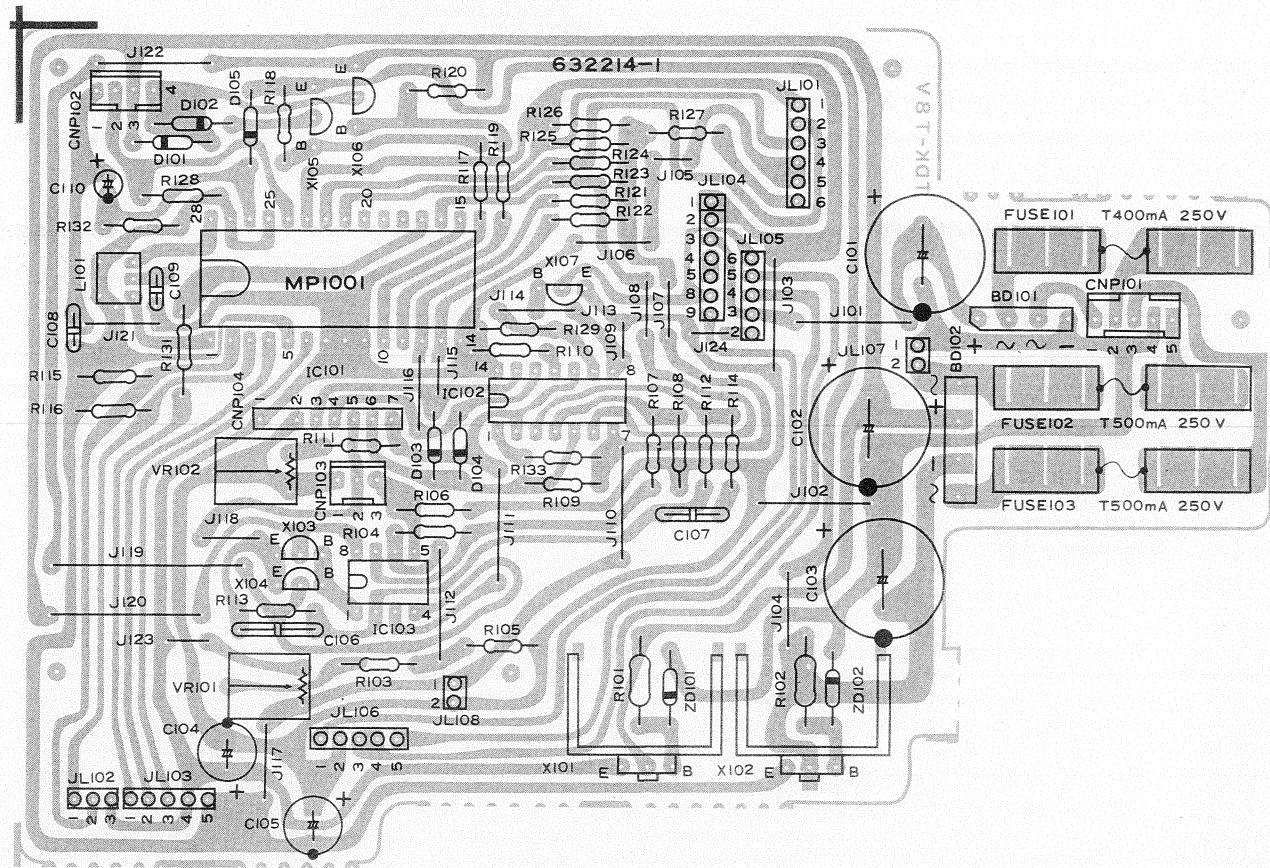
COMPONENT LOCATION FOR CUE, AND PLAY/CUT

632214-7

CUE SW   JL102   P/C SW

TDK-T8V
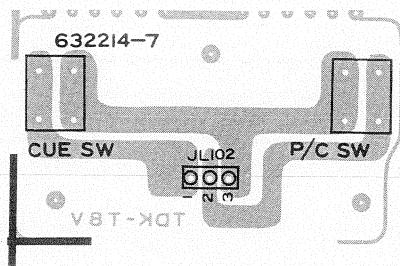
COMPONENT LOCATION FOR POWER SWITCH

T3 T2
632214-4
T4
T1
POWER SW
C111
VR103
JL106
5 4
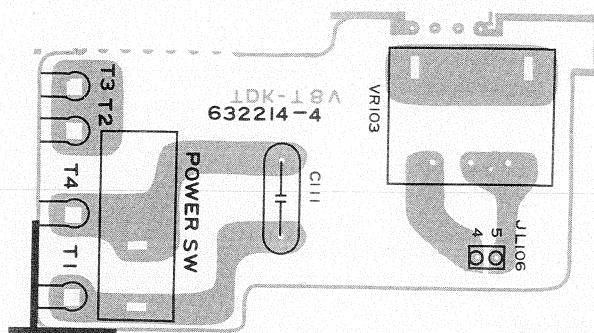
COMPONENT LOCATION FOR
LED OF QUARTZ

632214-5
LD103
D106
LD105
R130
LD104
JL107
JL108
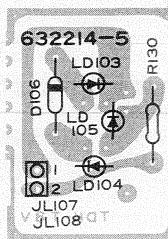
COMPONENT LOCATION FOR
LED OF REPEAT

JL109
632214-8

COMPONENT LOCATION FOR LED

LD101
JL101
632214-3

COMPONENT LOCATION FOR
AUTOMATIC SENSOR

JL101
X109
X110
X108
632214-2
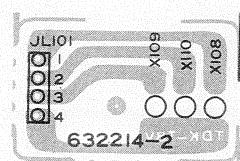
Voltage of Transistors

Posit. \ Tr.		X_{101}	X_{102}	X_{103}	X_{104}	X_{105}	X_{106}	X_{107}
REST	Base	5.4V	−5.8V	−0.8V	−0.8V	0V	−14.4V	0V
	Collector	14.1	−14.4	14.1	−14.4	14.1	14.1	7.5
	Emitter	4.8	−5.2	0	0	0	−14.4	0
PLAYING	Base	5.4	−5.8	−0.8	−0.8	0.5	−13.2	0
	Collector	12.3	−13.8	12.9	−13.5	−0.1	0.7	10
Cue Down	Emitter	4.8	−5.2	0	0	−0.2	−13.7	0
PLAYING	Base	5.4	−5.8	−0.8	−0.8	0	−13.3	0
	Collector	13.5	−14.2	13.7	−13.8	13.3	13.4	10
Cue Up	Emitter	4.8	−5.2	0	0	0	−13.6	0

1) Adjustment of VR101 (Offset adjustment of IC103):

Connect 1 pin and 6 pin of CNP104 and adjust VR101 to make voltage between 2 pin and 5 pin less than ±100mV.

2) Adjustment of VR102 (Adjustment of Arm Speed):

Adjust VR102 to set the time from 3 sec. to 5 sec. when the tonearm returns from returun position of EP to the arm rest.

Wave form between 2 pin and 4 pin of CNP104.
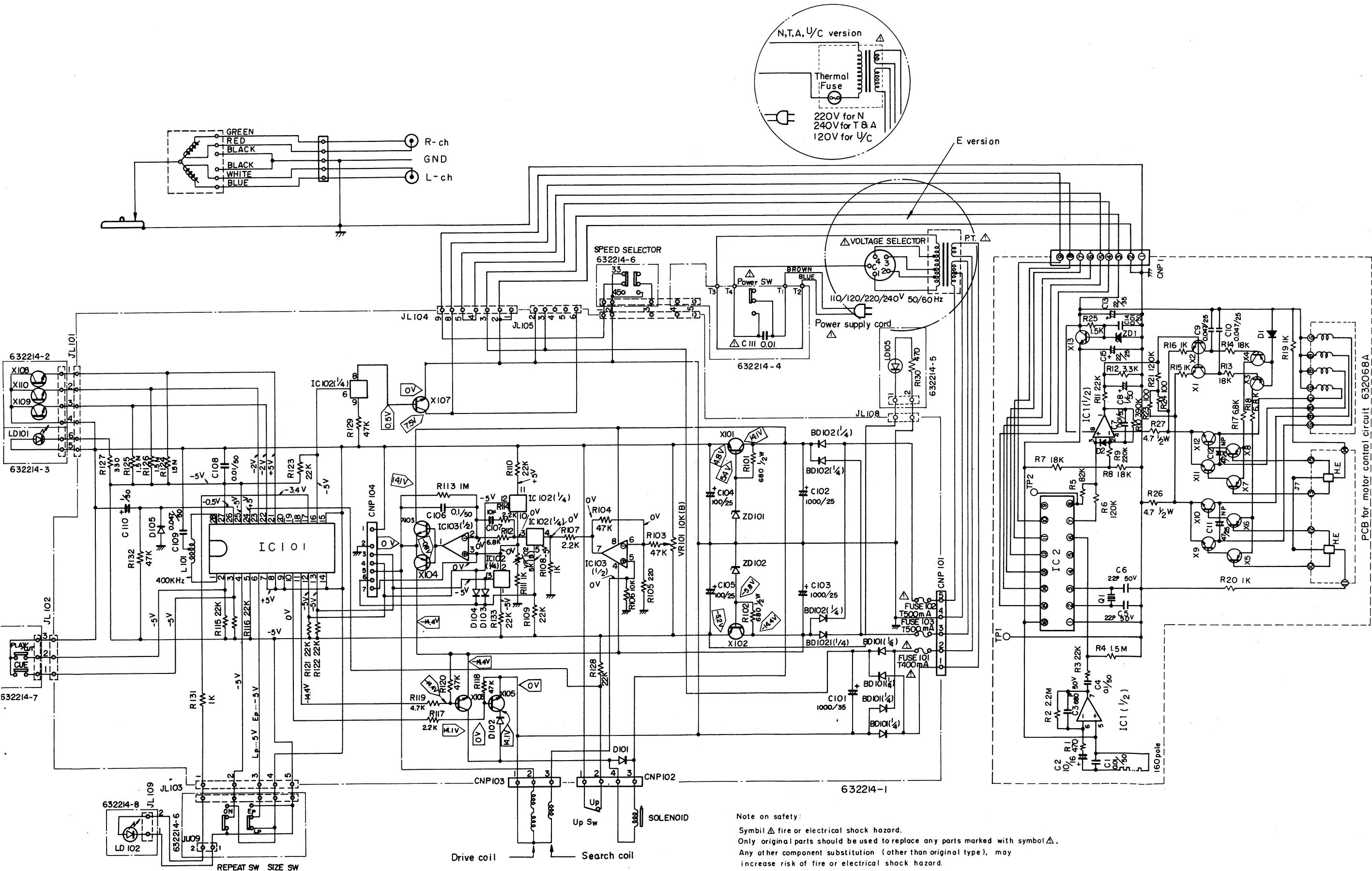
3 - 5 sec.

2 pin······Ground

SCHEMATIC DIAGRAM

Note on safety:

Symbil ⚠ fire or electrical shock hazard.
Only original parts should be used to replace any parts marked with symbol ⚠.
Any other component substitution (other than original type), may increase risk of fire or electrical shock hazard.

Components and wiring are subject to change for modification without notice.

SCHEMATIC DIAGRAM MAIN MOTOR CONTROL

Ⓐ IC1 7P — 8V — 8.9V — T_1

Ⓑ — 3.56 V

Ⓒ IC1 — 3.66 V

Ⓓ X9 (X10, X11, X12) Base — 0.7V / 0V

Ⓔ X5–X6 (X7–X8) Base — 0.4V / 0V — T_2

Ⓕ X9 (X10, X11, X12) Collector — T_2 — 22V / 21V

	T_1	T_2
Lp	22.5	225
Ep	16.7	167

PIN NO.	IC2
1	0
2	—
3	—
4	8.02
5	8.02
6	—
7	3.58
8	4.1
9	0
10	0
11	0
12	8.02
13	—
14	—
15	—
16	8.02

(Unit: V)

PIN NO.	IC1
1	—
2	3.52
3	4.06
4	0
5	—
6	—
7	—
8	22

(Unit: V).

Transistor

	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12
Base	—	—	—	—	—	—	—	—	—	—	—	—
Collector	—	—	12.86 ~ 13.22	12.86 ~ 13.22	—	—	—	—	—	—	—	—
Emitter	0.08 ~ 0.1	0.08 ~ 0.1	21.48	21.48	12.40 ~ 12.78	12.40 ~ 12.78	12.40 ~ 12.78	12.40 ~ 12.78	0.08 ~ 0.1	0.08 ~ 0.1	0.08 ~ 0.1	0.08 ~ 0.1

(Unit: V)

FG Pattern 160 pole

Pattern   Unit: ms   X9 (X10, X11, X12) Base
X5–X6 (X7–X8) Base
X9 (X10, X11, X12) Collector
Power Supply
PCB Ass'y

Power Supply P.C.B Ass'y — CNP1 — LP EP

PARTS LIST

(Mechanical Parts)

REF. DESIG.	PART NO.	E	N	T	A	DESCRIPTION
1	849.1851.nec	1	1	1	1	Cabinet Case Ass'y
-1	849.1831.					Cabinet Case Not supplied separate
-2	849.184.					Mechanism Base supplied separate
2	915.2640.nec	9	9	9	9	Rubber Cushion
3	910.2432.nec	1	1	1		Base
4	896.8381.nec	1	1	1		Badge
5	912.7940.nec	1	1	1		Decolation Plate
6	852.7980.nec	1	1	1		Sub-base
7	912.8040.nec	1	1	1		Knob
8	897.5540.nec	1	1	1		Washer
9	913.0330.nec	1	1	1		Spring
10	912.9930.nec	1	1	1		Cam
11	911.4990.nec	1	1	1		Rest Ass'y
12	899.9812.nec	1	1	1		Shaft Ass'y (1)
13	910.0730.nec	1	1	1		Spring
14	287.6800.nec	1	1	1		Cam Spring
15	899.9361.nec	1	1	1		Plate
16	896.2680.nec	1	1	1		Elevation Nut
17	899.9850.nec	1	1	1		Disc Plate Ass'y
18						COIL PCB
-1	705.7201.nec	3	3	3	3	Coil
-2	631.9470.nec	1	1	1		Spool
-3	912.7960.nec	1	1	1		Coil PCB
-4	913.0650.nec	1	1	1		Connector Ass'y
19	913.0670.nec	1	1	1		Grounding Wire Ass'y
-1	912.7961.nec	1	1	1		Coil PCB
-2	871.4742.nec	1	1	1		Shielding Wire Ass'y
-3	912.8911.nec	1	1	1		Arm Rotor Ass'y (1)
20	896.59985.nec	1	1	1		Eccentric Pin
21	899.9573.nec	1	1	1		Slit Plate
22	899.9931.nec	1	1	1		Angle Ass'y
23	899.9941.nec	1	1	1		Coil Spring
24	899.958B.nec	1	1	1		Lever, Lifter
25	911.6123.nec	1	1	1		Solenoid Ass'y
26	899.9960.nec	1	1	1		Leaf Switch
27	910.2940.nec	1	1	1		Spacer
29	852.8130.nec	1	1	1		Tonearm Ass'y

(Cartridge / Electrical Parts)

REF. DESIG.	PART NO.	E	N	T	A	DESCRIPTION
29	912.7510.nec	1	1	1	1	Cartridge Ass'y MM-81/II
	912.7490.nec	1	1	1		Stylus (MM)
	852.813H.nec	1	1	1		Head shell
	852.813W.nec	1	1	1		Counter-Weight
	852.813Z.nec	1	1	1		Cartridge Screw
	852.813M.nec	1	1	1		Tonearm
-2	852.813L.nec	1	1	1		Arm Nut, LN10
30						
31	873.5460.nec	1	1	1		LED Case
32	912.8051.nec	1	1	1		Strobe Window
33	912.4820.nec	3	3	3		Rubber Cushion
34	912.3143.nec	1	1	1		Spring Plate
35	912.3140.nec	4	4	4		Spring Plate
36	912.1891.nec	4	4	4		Plate Lock
37	632.1720.02n	1	1	1		Motor DDM-522QM-10
	632.0680.nec	1	1	1		PCB
IC1	Z41.2002.61n	1	1	1		IC, MPC4558 C
IC2	Z41.2008.0ne	1	1	1		IC, TC9142P
X1	Z41.0410.2ne	1	1	1		Transistor 2SC945 P
X2	Z41.0410.2ne	1	1	1		Transistor 2SC945 P
X13	Z41.0410.2ne	1	1	1		Transistor 2SC945 P
X3	Z41.0010.2ne	1	1	1		Transistor 2SA733 P
X4	Z41.0010.2ne	1	1	1		Transistor 2SA733 P
X5	Z41.0010.2ne	1	1	1		Transistor 2SA733 P
X6	Z41.0010.2ne	1	1	1		Transistor 2SA733 P
X7	Z41.0010.2ne	1	1	1		Transistor 2SA733 P
X8	Z41.0010.2ne	1	1	1		Transistor 2SA733 P
Q1	705.5340.nec	1	1	1		HC-18U
D1	Z41.1010.1ne	2	2	2	2	DIODE 1S853
D2	Z41.1011.1ne	1	1	1		DIODE 1S953
ZD1	Z41.1209.2ne	1	1	1		ZD RD9.1E (B1)
X9	Z41.0429.2ne	1	1	1		Transistor 2SC2001 K
X10	Z41.0429.2ne	1	1	1		Transistor 2SC2001 K
X11	Z41.0429.2ne	1	1	1		Transistor 2SC2001 K
X12	Z41.0429.2ne	1	1	1		Transistor 2SC2001 K
C3	Z40.8361.1sn	1	1	1		Ceramic Capacitor 50V K 680PF
C5	Z40.8611.7sn	1	1	1		Ceramic Capacitor 50V K 22PF
C6	Z40.8611.7sn	1	1	1		Ceramic Capacitor 50V K 22PF
C1	Z40.8382.5sn	1	1	1		Ceramic Capacitor 50V Z 0.01μF
C14	Z40.8382.5sn	1	1	1		Ceramic Capacitor 50V Z 0.01μF

REF. DESIG.	PART NO.	E	N	T	A	DESCRIPTION
J5	704.8450.nec	1	1	1	1	Jumper wire, 0.6x10L
J6	704.8450.nec	1	1	1	1	Jumper wire, 0.6x10L
CNP1	Z42.6003.14n	1	1	1	1	Connector Post 9PIN
TP1	706.1670.nec	1	1	1	1	Washer-type Pin, 1.0x16L
TP2	706.1670.nec	1	1	1	1	Washer-type Pin, 1.0x16L
	706.3550.nec	1	1	1	1	Hole Element
38	873.5820.nec	1				Power Trance
	873.5960.nec		1	1		Power Trance
	873.5830.nec				1	Power Trance
39	898.2560.nec				1	Switch, Voltage
43	912.8890.nec	1	1	1	1	Cover, Switch
44	899.9561.nec	1	1	1	1	Holder, Sensor
45	912.8060.nec	3	3	3	3	Button
46	912.7930.nec	3	3	3	3	Button
47	912.8830.nec	2	2	2	2	Guide, Button
48	898.5501.nec	1	1	1	2	Holder, Cord
49	895.6172.nec	1		1	1	Power Supply Cord Ass'y
	870.9130.nec		1			Power Supply Cord Ass'y
50	852.7991.nec	1	1	1	1	Botton Lid
51	892.2272.nec	4	4	4	4	Foot
52	620.0792.nec	1	1	1	1	Turntable Platter
53	871.5581.nec	1	1	1	1	Turntable Sheet
54	852.6630.nec	1	1	1	1	Dust Cover
55	912.8840.nec	2	2	2	2	Hinge Ass'y
56	898.3400.nec	1	1	1	1	EP Adaptor
57	912.9940.nec	1	1	1	1	Lever, I.F.C.
58	913.0700.nec	2	2	2	2	Connector Ass'y
59	912.9540.nec	2	2	2	2	Rubber Spacer
60	893.2150.nec	2	2	2	2	Bush
61	620.1280.nec	1	1	1	1	Control Circuit Board Ass'y
	706.7000.nec	1	1	1	1	Control PCB Ass'y (1)
IC101	632.0000.nec	1	1	1	1	IC
IC102	Z41.2010.2ne	1	1	1	1	IC, TC4066 B
IC103	Z41.2002.61n	1	1	1	1	IC, MPC4558 C
X101	Z41.0613.1ne	1	1	1	1	Transistor 2SD882 Q
X102	Z41.0207.1ne	1	1	1	1	Transistor 2SB772 Q
X103	Z41.0607.2ne	1	1	1	1	Transistor 2SD667 C
X104	Z41.0204.2ne	1	1	1	1	Transistor 2SB647 C
X107	Z41.0410.1ne	1	1	1	1	Transistor 2SC945 P
X108	Z41.0814.1ne	3	3	3	3	Transistor PN120S

REF. DESIG.	PART NO.	E	N	T	A	DESCRIPTION
C9	Z40.8353.3sn	1	1	1	1	Ceramic Capacitor 25V Z 0.047 μF
C10	Z40.8353.3sn	1	1	1	1	Ceramic Capacitor 25V Z 0.047 μF
C7	Z40.8211.3pn	1	1	1	1	Capacitor 50V K 0.01 μF
C4	Z40.8212.5Pn	1	1	1	1	Capacitor 50V K 0.1 μF
C15	Z40.8030.5Hn	1	1	1	1	Electrolytic 25V 22 μF
C8	Z40.8050.5Hn	1	1	1	1	Electrolytic 50V 1.0 μF
C2	Z40.8020.1Hn	1	1	1	1	Electrolytic 16V 10 μF
C11	Z40.8605.7Hn	1	1	1	1	Electrolytic 25V 47 μF
C12	Z40.8605.7Hn	1	1	1	1	Electrolytic 25V 47 μF
C13	Z40.8040.5Hn	1	1	1	1	Electrolytic 35V 22 μF
R1	Z40.5026.5AN	1	1	1	1	Carbon 470H 5% 1/4W
R25	Z40.5027.7AN	1	1	1	1	Carbon 1.5K 5% 1/4W
R12	Z40.5028.5AN	1	1	1	1	Carbon 3.3K 5% 1/4W
R7	Z40.5030.3AN	1	1	1	1	Carbon 18K 5% 1/4W
R8	Z40.5030.3AN	1	1	1	1	Carbon 18K 5% 1/4W
R13	Z40.5030.3AN	1	1	1	1	Carbon 18K 5% 1/4W
R14	Z40.5030.3AN	1	1	1	1	Carbon 18K 5% 1/4W
R3	Z40.5030.5AN	1	1	1	1	Carbon 22K 5% 1/4W
R11	Z40.5030.5AN	1	1	1	1	Carbon 22K 5% 1/4W
R5	Z40.5031.9AN	1	1	1	1	Carbon 82K 5% 1/4W
R6	Z40.5032.3An	1	1	1	1	Carbon 120K 5% 1/4W
R9	Z40.5032.9An	1	1	1	1	Carbon 220K 5% 1/4W
R10	Z40.5033.5An	1	1	1	1	Carbon 390K 5% 1/4W
R4	Z40.5034.9An	1	1	1	1	Carbon 1.5M 5% 1/4W
R2	Z40.5035.3An	1	1	1	1	Carbon 2.2M 5% 1/4W
R23	Z40.5044.9An	1	1	1	1	Carbon 100H 5% 1/4W
R24	Z40.5044.9An	1	1	1	1	Carbon 100H 5% 1/4W
R15	Z40.5047.3An	1	1	1	1	Carbon 1.0K 5% 1/4W
R16	Z40.5047.3An	1	1	1	1	Carbon 1.0K 5% 1/4W
R19	Z40.5047.3An	1	1	1	1	Carbon 1.0K 5% 1/4W
R20	Z40.5047.3An	1	1	1	1	Carbon 1.0K 5% 1/4W
R17	Z40.5049.3An	1	1	1	1	Carbon 6.8K 5% 1/4W
R18	Z40.5049.3An	1	1	1	1	Carbon 6.8K 5% 1/4W
R21	Z40.5052.3An	1	1	1	1	Carbon 120K 5% 1/4W
R26	Z40.5800.2Bn	1	1	1	1	Carbon 4.7H 5% 1/2W
R27	Z40.5800.2Bn	1	1	1	1	Carbon 4.7H 5% 1/2W
J1	704.8450.nec	1	1	1	1	Jumper wire, 0.6x10L
J2	704.8452.nec	1	1	1	1	Jumper wire, 0.6x7.5L
J3	704.8450.nec	1	1	1	1	Jumper wire, 0.6x10L
J4	704.8450.nec	1	1	1	1	Jumper wire, 0.6x10L

Top table

REF. DESIG.	PART NO.	E	N	T	A	DESCRIPTION
C103	Z40.8600.9ne					25V 1000 µF
C104	Z40.8030.9ne	2	2	2	2	Electrolytic 25V 100 µF
C105	Z40.8030.9ne	1	1	1		Electrolytic 25V 100 µF
C106	Z40.8212.5ne	1	1	1	1	Capacity 50VZ 0.01 µF
C108	Z40.8382.5ne	1	1	1	1	Ceramic Capacitor 50VZ 0.01 µF
C109	Z40.8382.1ne	1	1	1	1	Ceramic Capacitor 50VZ 4700PF
C110	Z40.8050.5ne	1	1	1	1	Electrolytic 50V 1.0 µF
C107	Z40.8612.3ne	1	1	1	1	Electrolytic 25V 10 µF NP
C111	899.2992.nec	1	1	1	1	Capacitor
L101	706.2950.nec	1	1	1	1	400KHz
	912.5950.nec	2	2	2	2	Switch
	912.8900.nec	1	1	1	1	Push Switch. (SUN302A) REPEAT, SIZE, SPEED
	910.6731.nec	1	1	1	1	Power Switch (SDL)
FUSE101	893.7911.nec	1	1	1	1	Fuse
EUSE102	892.1710.nec	2	2	2	2	Fuse
FUSE103	893.3950.nec	6	6	6	6	Fuse Holder
	911.3810.nec	2	2	2	2	Heat Sink Ass'y
	Y10.3008.03n	2	2	2	2	Screw + 3x8
JL104	706.7010.nec	1	1	1	1	Lead Wire Ass'y
CNP101	706.0335.nec	1	1	1	1	Connector Post PIN
CNP102	706.0334.nec	1	1	1	1	Connector Post 4PIN
CNP103	706.0333.nec	1	1	1	1	Connector Post 3PIN
CNP104	399.2532.nec	1	1	1	1	Connector Post 7PIN
62	W42.9490.82n	1	1	1	1	UL tube 1617 # 22 L490
63	890.4324.nec	1	1	1	1	Spacer
64	913.1840.nec	2	2	2	2	Holder Transformer
65	894.4080.nec	9	7	7	7	Wire Fastener
66						
67						
68						
	913.0740.nec	1				Rating Label
	913.0741.nec		1			Rating Label
	913.0744.nec			1		Rating Label
69	911.0140.nec	1	1	1		Japan Label
70	892.6740.nec	1	1	1	1	Number Label
71	893.3890.nec	1	1	1	1	Caution Label
A	Y37.0000.01n	2	2	2	2	CS Stopper
B	Y09.3008.01n	4	4	4	4	Washer Type Screw 3x8
C	Y31.0003.01n	1	1	1	1	Spring Washer
D	Y10.3016.01n	1	1	1	1	Screw 3x16
E	912.1130.nec	2	2	2	2	Washer

Bottom table

REF. DESIG.	PART NO.	E	N	T	A	DESCRIPTION
X109	Z41.0814.1ne	3	3	3	3	Transistor PN120S
X110						
BD101	Z41.1004.1ne	1	1	1	1	Diode, SIVB10
BD102	Z41.1003.1ne	1	1	1	1	Diode, RB151
ZD101	Z41.1204.2ne	2	2	2	2	Zener Diode RD5.6E (B2)
D101	Z41.1001.3ne	2	2	2	2	Diode, F14C
D102	Z41.1020.1ne					Diode, EM1Z
D103	Z41.1010.1ne	3	3	3	3	Diode, 1SS53
LD101	Z41.1026.0ne	1	1	1	1	Diode, SFL2110S (D)
LD102	Z91.2995.nec	1	1	1	1	LED (SEL1112R)
LD105	912.7130.nec	1	1	1	1	LED (SEL1124R)
VR101	704.8258.nec	1	1	1	1	Variable Resistor
VR102	704.8257.nec	1	1	1	1	Variable Resistor
R101	Z40.5443.5ne	2	2	2	2	Resistor M-OX 680H 5% 1/2W
R103	Z40.5051.3ne	6	6	6	6	Carbon Resistor 47K 5% 1/4W
R105	Z40.5045.7ne	1	1	1	1	Carbon Resistor 220H 5% 1/4W
R106	Z40.5049.7ne	1	1	1	1	Carbon Resistor 6.8K 5% 1/4W
R107	Z40.5048.1ne	3	3	3	3	Carbon Resistor 2.2K 5% 1/4W
R108	Z40.5047.3ne	3	3	3	3	Carbon Resistor 1.0K 5% 1/4W
R111						
R131						
R109	Z40.5050.5ne	9	9	9	9	Carbon Resistor 22K 5% 1/4W
R110						
R115						
R116						
R121						
R122						
R123						
R128						
R133						
R112	Z40.5049.3ne	1	1	1	1	Carbon Resistor 6.8K 5% 1/4W
R113	Z40.5054.5ne	1	1	1	1	Carbon Resistor 1.0M 5% 1/4W
R119	Z40.5048.9ne	1	1	1	1	Carbon Resistor 4.7K 5% 1/4W
R124	Z40.5054.9ne	3	3	3	3	Carbon Resistor 1.5M 5% 1/4W
R125						
R126						
R127	Z40.5046.1ne	1	1	1	1	Carbon Resistor 1.5M 5% 1/4W
R130	Z40.5046.5ne	1	1	1	1	Carbon Resistor 470Ω 5% 1/4W
C101	Z40.8601.2ne	1	1	1	1	35V 1000 µF
C102	Z40.8600.9n e	2	2	2	2	25V 1000 µF

REF. DESIG.	PART NO.	QUANTITY E	N	T	A	DESCRIPTION
F	Y34.0002.01n	2	2	2	2	E-ring
G	Y12.3003.01n	2	2	2	2	Screw
H	Y08.3016.04n	3	3	3	3	Washer Type Screw ⊕ 3x16
I	Y09.3010.02n	15	15	15	15	Washer Type Screw ⊕ 3x10
J	Y34.0003.02n	1	1	1	1	Bow E-3 Washer
K	Y34.0010.02n	1	1	1	1	Bow E-10 Washer
L	Y21.3008.01n	2	2	2	2	Bolt 3x6
M	Y01.3004.04n	2	2	2	2	Screw 3x4
N	Y01.6050.01n	1	1	1	1	Screw ⊕ 2.6x5
P	Y10.2020.01n	3	3	3	3	Screw ⊕ 3x16
Q	912.2900.nec	10	10	10	10	Washer Type Screw
S	Y09.3016.02n	2	2	2	2	Washer Type Screw ⊕ 3x16
T	Y41.0003.02n	2	2	2	2	Washer
U	Y37.0010.01n	2	2	2	2	CS-Stopper
W	Y10.3008.01n	16	16	16	16	Screw ⊕ 3x8
Y	Y10.3016.02n	1	1	1	1	Screw ⊕ 3x16
Z	Y09.301.02n	19	19	19	19	Washer Type Screw ⊕ 3x12

PACKING MATERIALS
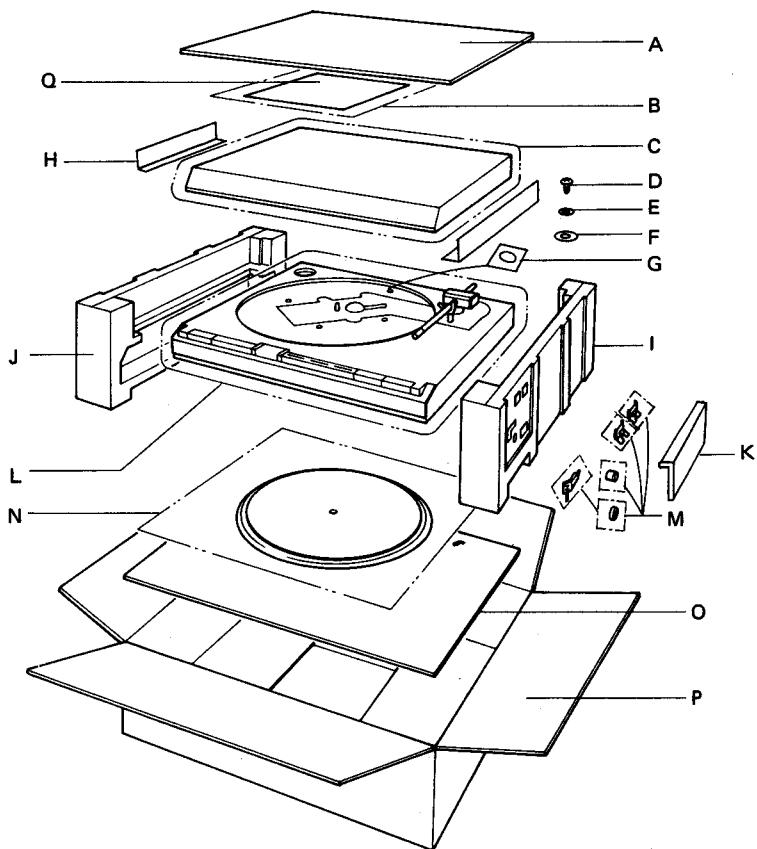
REF. DESIG.	PART NO.	QUANTITY				DESCRIPTION
		E	N	T	A	
A,H,K, Q & P	852.8012.nec	1	1	1	1	Packing Case with reinforcement (1 pc each A,O & P,2 pcs each H & K)
"	852.9320.nec					"
"	852.8014.nec	1	1	1	1	"
B	Z63.2303.40n	1	1	1	1	Polyethy Bag, 230 x 340L
C	913.3840.nec	1	1	1	1	Foamed Plastic Bag
D	Y08.4030.04n	4	4	4	4	Transportation Screw, ±4 x 30
E	Y64.2120.08n	4	4	4	4	Washer, Iron 4.2 x 12 x 0.8
F	890.8160.nec	4	4	4	4	Caution Tag
G	913.3340.nec	1	1	1	1	Lock Caution Tag
I	852.800R.nec	1	1	1	1	Cushion
J	852.800L.nec	1	1	1	1	Cushion
L	891.264-1.nec	1	1	1	1	Foamed Plastic Sheet
M	Z63.0701.20n	5	5	5	5	Polyethy Bag, 70 x 120L
N	Z63.3405.70n	1	1	1	1	Polyethy Bag, 340 x 570L